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A NEW CRAYFISH OF THE GENUS CAMBARUS FROM MISSISSIPPI

By Horton H. Hobbs, Jr.

Samuel Miller Biological Laboratories, University of Virginia

The new species described below was collected from four localities in eastern Mississippi in the Pascagoula and Tombigbee drainage systems. In its habits it resembles *Cambarus fodiens* (Cottle, 1863: 217) and *Cambarus uhleri* Faxon (1884: 116), and probably is a secondary burrower (Hobbs, 1942: 20). Most of the specimens were taken in shallow water from among grasses and debris in roadside ditches; however, others were found in sluggish portions of streams and a few were dug from simple burrows less than two feet in depth.

Because of the unusual combination of certain characteristics and the unique chela and first pleopod of the male a new Section of the genus is proposed below to receive this crayfish. (see *Relationships*).

Genus *Cambarus* Erichson, 1846

Cambarus cristatus,[1] sp. nov.

Diagnosis.—Rostrum subplane or slightly excavate, ovate, and without lateral spines at base of acumen. Areola 4-7.5 times longer than broad and comprising 31-32 percent of entire length of carapace. Lateral surfaces of carapace devoid of spines or prominent tubercles. Suborbital angle obsolete. Postorbital ridges without spines or tubercles on cephalic extremity. Antennal scale almost one-half as broad as long. Chela with a cristiform row of tubercles on inner margin of broad palm, the upper surface of the latter covered with small ciliated squamous tubercles. First pleopod of first form male with central projection directed at approximately a 65 degree angle to the main shaft of the appendage and the relatively slender mesial process at a 90 degree angle. Annulus ventralis of female movable; see figure 7.

Holotypic Males, Form I.—Body subcylindrical. Abdomen narrower than thorax (6.2-7.8 mm. in widest parts respectively). Width of carapace less than depth in region of caudodorsal margin of cervical groove (7.8-8.0 mm.). Areola relatively broad (4.7 times longer than wide), with moderately deep punctations, three across narrowest portion. Cephalic section of carapace 2.1 times as long as areola (length of areola 32.1 percent of entire length of carapace). Rostrum subspatulate in outline with a small up-turned acumen; margins, not swollen and only slightly elevated, diverge for a short distance from base before gently converging toward apex; no lateral spines present. Upper surface subplane, a slight submedian depression in basal half and with minute setiferous punctations. Subrostral ridges poorly developed and visible in dorsal aspect for a short distance at base.

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[1] L. *crista*—crest. So named because of the cristiform row of tubercles along the inner margin of the palm of the chela.

Postorbital ridges, long, well-defined and with dorsolateral longitudinal grooves; cephalic extremities without tubercles or spines. Suborbital angle obsolete. Branchiostegal spine acute and well-defined. No spines or tubercles on side of carapace immediately caudad of cervical groove. Carapace punctate dorsad and weakly granulate laterad. Abdomen longer than carapace (18.1-16.2 mm.). Cephalic section of telson with four spines in the right and three in the left caudolateral corners.

Epistome (fig. 8) broadly triangular with a subplane surface and a small cephalomedian projection. Antennules of the usual form with a prominent spine on the lower surface of basal segment. Antennae extend caudad to fourth abdominal segment. Antennal scale (fig. 3) broader in distal than in proximal half, almost one-half as long as broad; outer thickened portion not so wide as lamellar area and terminating distally in an acute spine.

Chela with broad palm only slightly inflated: upper surface of palmar area with ciliated squamous tubercles and lower with setiferous punctations. Inner margin of palm with a cristiform row of 17 tubercles. All other tubercles on palm distinctly smaller. Fingers not gaping. Upper and lower surfaces of both fingers with a submedian longitudinal ridge flanked by setiferous punctations; ridges on upper surfaces more prominent. Opposable margin of dactyl with a row of three corneous-tipped tubercles along basal half, between and distad of which is a sublinear arrangement of minute denticles; mesial margin with setiferous punctations, the more distal ones of which lie in a longitudinal groove. Opposable margin of immovable finger with three tubercles along proximal half; the distal one lies in a lower plane of the finger than that of the two proximal ones; distad and between these tubercles are minute denticles corresponding in position to those on the dactyl; lateral margin of finger with a row of setiferous punctations.

Carpus of cheliped a little longer than broad, and with a distinct longitudinal furrow above; mesial half of podomere with conspicuous tubercles and lateral half with setiferous punctations. Only two tubercles on podomere conspicuously larger than others—one on mesial surface distad of midlength, and the other at lower, outer distal margin.

Merus of cheliped with upper, mesial, and lower surfaces tuberculate and lateral surface punctate. Although tubercles on lower surface are scattered, an inner row of 17 tubercles and an outer one of nine are moderately well-defined.

Hooks on ischiopodites of third pereiopods only; hooks strong and simple. Coxa of fourth pereiopod without a conspicuous prominence; a small ventrally projecting triangular one present on fifth.

Sternum at base of coxopodite of third and fourth pereiopod with prominent setiferous lobes—more conspicuous than those of most crayfishes.

First pleopod (figs. 1, 5) reaching coxopodite of third pereiopod when abdomen is flexed; distal portion treminating in two distinct parts. Central projection corneous, with an acute tip, and bent at an angle of about 65 degrees. Mesial process non-corneous, with distal portion slender and directed at a 90 degree angle to the main shaft of the appendage. Both terminal elements directed caudad.

Morphotypic Male, Form II.—Differs from the holotype in the following respects: Upper surface of rostrum more hirsute; punctations in areola not so conspicuous or so abundant; cephalic section of telson with four spines in each caudolateral corner; row of tubercles along inner margin of palm much reduced and scarcely visible; opposable margins of fingers of chelae with very weak tubercles and a single row of minute denticles. Groups of tubercles on proximal podomeres of chelipeds occur in smaller numbers and are reduced in size. The usual differences occur in the secondary sexual characteristics—i.e., hooks on ischiopodites of third pereiopods much reduced; central projection of first pleopod noncorneous and blunt, and mesial process subtriangular (figs. 2 and 4); also sternal prominences at bases of third and fourth pereiopods less conspicuous. (See measurements.)

Allotypic Femlae.—Differs from the holotype in the following respects: Upper surface of rostrum hirsute; cephalic section of telson with three spines in each caudolateral corner; inner margin of palm of chela with a cristiform row of 14 tubercles. Annulus ventralis subovate with the greatest length in the transverse axis. The broadly S-shaped sinus originates near the midcephalic margin of the annulus and passes caudad to its midcaudal margin; surface features are illustrated in figure 7. Sternal plate immediately caudad of annulus ventralis subrectangular in outline.

Measurements.—As follows (in mm.):

Carapace—	Holotype	Morphotype	Allotype
Height	8.0	6.3	7.4
Width	7.8	6.5	8.1
Length	16.2	14.2	16.8
Areola—			
Width	1.1	0.9	1.1
Length	5.2	4.7	5.5
Rostrum—			
Width	3.0	2.6	3.2
Length	3.5	3.4	3.8
Chela—			
Length of inner margin of palm	4.5	2.5	3.4
Width of palm	4.7	2.5	4.2
Length of outer margin of hand	10.3	6.7	8.7
Length of dactyl	5.5	4.2	5.0

Type Locality.—Roadside ditch, 11.3 miles south of Macon on Route 45, Noxubee County, Mississippi. Here the animals were collected with a seine pulled through the grass and litter on the clay bottom. In no place was the turbid water more than a foot deep. One or two specimens were dug from simple burrows about one and one-half feet deep. Other crayfishes taken at the same time were *Procambarus acutissimus* (Girard, 1852:91) and an undescribed species of the latter genus.

Disposition of Types.—The holotypic male, form I, allotypic female, and morphotypic male, form II are deposited in the United States National Museum (nos. 96985, 96986, and 96987, respectively). Of the 51 paratypes, one male, form I, one male, form II, and one female are deposited in the Museum of Comparative Zoology and a similar series in the collection of Dr. G. H. Penn. Three males, form I, eight males, form II, 25 females, four juvenile males and five juvenile females are retained in my personal collection at the University of Virginia.

Variations.—The areola varies in width from 4-7.5 times longer than broad, with from two to four punctations in narrowest part. In some specimens the punctations are scattered and relatively inconspicuous while in others they are more abundant and prominent. The row of tubercles on the palm of the chela varies from 14 to 18, the males usually having a larger number than the females. Among the minor variations in numbers of spines or tubercles is a range of two to five spines in the posterolateral corners of the cephalic section of the telson. The only suggestion of distinct local variations is seen in the annulus ventralis of the two females from Lauderdale County. In these specimens the sinus, which is not well-defined, is not so sinuous and lies in a longitudinal depression which is more conspicuous than that seen in females from the type locality.

Relationships.—*Cambarus cristatus* is not closely related to any described species of the genus. The first pleopod more nearly resembles that of certain members of the Diogenes Section, while the short, broad areola is similar to that of certain members of the Bartonii Section. In its habits, as stated above, it is similar to *Cambarus fodiens* and *C. uhleri.* The shape of the chela and the broad antennal scale are unique, not found in any other members of the genus *Cambarus.* For the reasons stated it seems best to assign *cristatus* to a separate section of the genus, the Cristatus Section.

Specimens Examined.—A total of 54 specimens have been examined from the following four localities in Mississippi. *Kemper County:* 4-1954-12c, Backwaters of Scooba Creek, 21.1 miles south of Scooba on U. S. Highway 45, 1 juv. ♂, W. R. West and Hobbs, coll. *Lauderdale County:* 4-1854-3b, Roadside ditch, 5 miles south of Meridian on U. S. Highway 11, 2 ♀♀, Jean E. Pugh, Sam R. Telford, and Hobbs, coll. *Lowndes County:* 4-1454-2c, Small stream, 0.5 miles north of the Noxubee County line on U. S. Highway 45, 1 ♀, 3 juv. ♂♂, 5 juv. ♀♀, J. E. P., S. R. T., and H. H. H. coll. *Noxubee County:* (Type locality) 4-1454-4a, roadside ditch, 11.3 miles south of Macon on U. S. Highway 45, 6 ♂♂ I, 11 ♂♂ II, 25 ♀♀, J. E. P., S. R. T., and H. H. H. coll. All of the specimens were collected from roadside ditches or from sluggish areas of streams. In both situations they were found among grass or in the detritus collected on the bottom, and a few specimens were dug from simple burrows.

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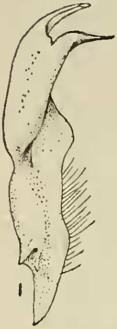
Explanation of Figures

Cambarus cristatus, sp. nov.

Fig. 1—Mesial view of first pleopod of male, form I.
Fig. 2—Mesial view of first pleopod of male, form II.
Fig. 3—Antennal scale.
Fig. 4—Lateral view of first pleopod of male, form II.
Fig. 5—Lateral view of first pleopod of male, form I.
Fig. 6—Lateral view of carapace of male, form I.
Fig. 7—Annulus ventralis of female.
Fig. 8—Epistome.
Fig. 9—Dorsal view of carapace of male, form I.
Fig. 10—Ischiopodite of third pereipod of male, form I.
Fig. 11—Distal podomeres of cheliped of male, form I.



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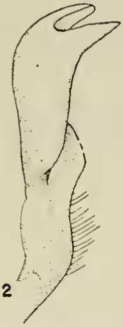

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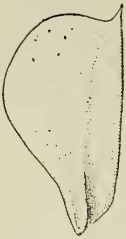

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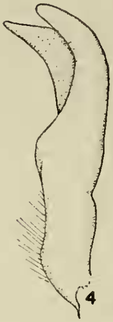

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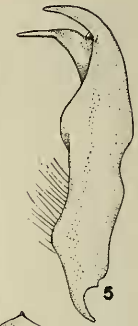

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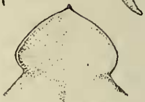

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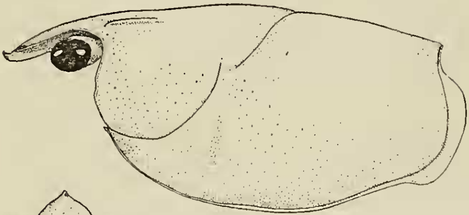

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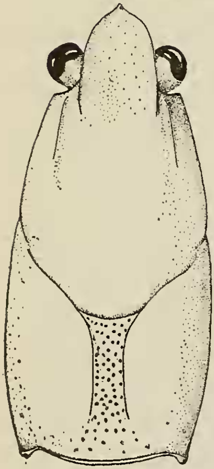

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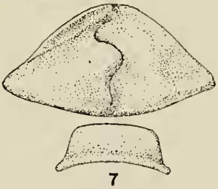

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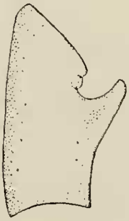

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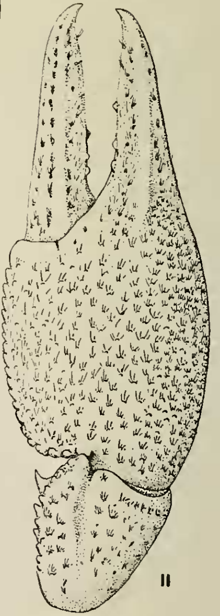

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